



City of Santa Fe

TRAFFIC CALMING PROGRAM



Adopted October 11, 2000

Traffic Engineering Division
PUBLIC WORKS DEPARTMENT



City of Santa Fe

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CITY OF SANTA FE TRAFFIC CALMING PROGRAM

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City of Santa Fe
TRAFFIC CALMING PROGRAM

I. Introduction

II. Program Goal, Objectives, and Policies

III. Application Process

IV. Procedures

- Eligibility and Ranking
- Plan Development
- Plan Approval and Implementation
- Project Evaluation

V. Techniques

- Techniques for Local Street Projects
- Techniques for Complex Traffic Calming Projects

VI. Application Forms

VII. Appendices

- A. Bibliography
- B. City of Santa Fe Functional Road Classification (FRC) Map
- C. City of Santa Fe Emergency Response Route Map
- D. City of Santa Fe Priority Snow Removal Roads Map

I. INTRODUCTION

What is neighborhood traffic calming?

"Neighborhood traffic" is a general term referring to any traffic on local residential streets. As population and employment in the City of Santa Fe have grown over the years our streets have experienced increases in traffic, and neighborhood groups and residents have become increasingly concerned about the effects of traffic. As a result calming or managing traffic in residential areas has become a common goal of many residents.

On local residential streets, a vision is now being promoted that motorists should be guests and behave accordingly. These streets are not intended to carry large amounts of non-residential traffic. Adverse traffic conditions on these streets can greatly affect neighborhood livability. If traffic impacts occur on a regular basis, the quality of life in the neighborhood can deteriorate. To maintain a high quality of life, Santa Fe's local residential streets should be protected from the negative impacts of traffic.

Neighborhood traffic calming is the development of an approach to calm and manage traffic and improve neighborhood safety and livability for neighborhoods experiencing traffic impacts. To be successful, approaches will differ for each neighborhood in order to best solve the particular traffic impacts in that area. Any approach to neighborhood traffic calming must involve the public in the planning and design of the project. This allows residents to evaluate the options available to them, to discuss the benefits and trade-offs of project proposals in their neighborhood, and to be actively involved in the decision-making process.

In addition to local residential streets, collector and minor arterial streets in some neighborhoods may experience traffic impacts that can also be mitigated through neighborhood traffic calming techniques.

What are the three "E"s in dealing with neighborhood traffic?

Dealing comprehensively with neighborhood traffic issues requires the use of various techniques, which generally fall under the categories of Education, Engineering and Planning, and Enforcement. *Education* provides information to people about how they as motorists can help to ease traffic impacts through changes in behavior and attitudes, and informs them about neighborhood traffic management activities and opportunities.

Engineering and planning encompasses both traditional traffic management measures as well as newer approaches, such as traffic calming, which, according to the Institute of Transportation Engineers, is the "combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street users." *Enforcement* enlists the assistance of the Police Department to focus enforcement efforts in project areas. All three are important components in dealing effectively with neighborhood and community-wide traffic issues.

How was the Traffic Calming Program (TCP) established?

The 1999 City of Santa Fe General Plan supports the city's efforts to develop traffic calming standards, and to "discourage speeding and cut-through traffic through neighborhoods by installing appropriate traffic control and calming measures, such as bulbuing sidewalks at intersections and narrower street widths, without limiting through streets." (*General Plan Policies 6-1-I-9, 6-1-I-11*)

Prior to adoption of the General Plan, the City Council in February of 1998 adopted Resolution 1998-12 calling for the establishment of a Neighborhood Traffic Management Program in Santa Fe. The council recognized that traffic was negatively impacting both safety and quality-of-life in the neighborhoods. Residents had requested that the city use traffic calming measures to slow speeding traffic and divert non-local traffic from neighborhood streets in order to make the neighborhoods more livable, quieter, and pedestrian-oriented. The council wanted to address these concerns while continuing to protect the health, safety, and welfare of all Santa Fe's citizens and visitors.

The council appointed a task force to study appropriate methods for the reduction of cut-through traffic, speeding traffic and other undesirable motoring behaviors in residential areas, and to develop a program for implementation of these methods. In October, 2000, the Santa Fe Traffic Calming Program (TCP) was approved by the City Council and initiated within the Traffic Division of the City Public Works Department.

How does the Traffic Calming Program work?

The TCP provides tools that can deal with traffic that negatively impacts neighborhood livability. At the neighborhood's initiative, city staff studies the nature of the traffic concern in the proposed area and assesses the eligibility of the proposed project for the TCP. If the project is eligible, it is ranked with other eligible projects according to specific ranking criteria. For projects that are prioritized, residents and city staff then become involved in developing a neighborhood traffic calming plan that will address the traffic problems specific to the project street or area.

The TCP provides a framework for residents of a neighborhood to examine traffic patterns in their area and choose alternatives that can achieve community acceptance. The TCP attempts to find a balance between the many uses and needs of the residential neighborhood and helping residents to feel safe and secure in their neighborhood.

This program does not necessarily provide a simple solution for every neighborhood traffic concern. In some cases the traffic concerns are complicated and may have developed over a long period of time. There are other methods outside the TCP that the City Traffic Division and other city departments can use to address other traffic issues.

What projects are covered by the Traffic Calming Program?

There are two types of projects in the TCP: *Local Street Projects* and *Complex Traffic Calming Projects*.

Local Street Projects deal with traffic problems on residential streets classified as “local” streets on the City of Santa Fe Functional Road Classification (FRC) Map (Appendix B). These small-scale projects cover an area limited to the properties adjacent to the targeted street. The planning and cost involved in a Local Street Project is usually less than what is required for more complex projects. These projects are funded through the recurring traffic calming budget of the City’s Public Works Department.

Complex Traffic Calming Projects are projects dealing with traffic impacts on residential streets classified as “collector” or “minor arterial” streets on the FRC map. These projects may deal with one or more streets, or, as treatment of these streets may cause diversion of traffic, an entire neighborhood. They may include emergency response routes or priority snow removal roads, and may look at other issues such as access points, enhancement of pedestrian facilities, and installation of more extensive physical modifications than those used in a Local Street Project.

The City of Santa Fe is committed to developing effective approaches to managing neighborhood traffic within the resources that are available. Neighborhood involvement is a key component in all aspects of the TCP.

How does a neighborhood start a Traffic Calming Program project?

Anyone residing or owning property within a neighborhood is eligible to apply for a TCP project for a local, collector, or minor arterial street(s) within that area.

- The first step is to schedule a pre-application meeting with a staff member from the City Traffic Division to discuss the area in question and the TCP process, including the initial petition process that the applicant must complete. Staff provides a packet of TCP program information, including application and petition forms.
- The applicant circulates a petition in the identified project area to demonstrate that at least 30% of residents and property-owners support initiation of a traffic calming project. The applicant must obtain the necessary signatures, complete the application materials, and return everything to the Traffic Division.
- The eligibility and ranking of the project is then studied by Traffic Division staff. Traffic studies are done to determine if the street or project area meet the minimum eligibility requirements for inclusion in the TCP. If a project is eligible, further studies are done to determine the priority ranking of the project in relation to other eligible projects that have been submitted to the TCP. Staff notifies the applicant about the status of the proposed project. If the project is ranked as a priority it moves into the plan development phase, which is outlined in the Procedures section of this document.

For more detailed information on how to start a TCP project see *Section III. Application Requirements* in this document.

II. PROGRAM GOAL, OBJECTIVES AND POLICIES

Program Goal: The goal of the Traffic Calming Program (TCP) is to establish procedures and techniques to promote community and neighborhood livability by mitigating the negative aspects of automobile traffic in the city's neighborhoods.

Objectives:

The overall objectives for the TCP are derived from existing city policy. They are:

- To improve neighborhood livability by mitigating the impact of vehicular traffic on residential neighborhoods.
- To promote safe and pleasant conditions for residents, motorists, bicyclists, pedestrians, and transit riders on residential streets.
- To manage vehicular traffic on neighborhood streets.
- To reduce the average speed of traffic on residential streets.
- To preserve and enhance pedestrian and bicycle access to neighborhood destinations.
- To solicit citizen participation in all phases of the program and in all traffic calming activities; and
- To provide a process that will address neighborhood traffic calming requests and make efficient use of city resources by prioritizing projects.

Policies:

The following policies are established as part of the TCP:

1. Streets eligible for the City of Santa Fe's Traffic Calming Program (TCP) must be publicly dedicated and maintained streets located within the City of Santa Fe.
2. Principal arterials as designated on the City of Santa Fe Functional Road Classification (FRC) Map are not eligible for the TCP. Roads classified as locals, collectors or minor arterials are eligible for the program.
3. Through traffic shall be routed to major roadways such as principal and minor arterials as designated on the City of Santa Fe FRC Map.
4. Some traffic may be rerouted from one local residential street to another as a result of a TCP project. Traffic rerouting can occur due to the implementation of such devices as divertors, cul-de-sacs, or partial road closures. The amount of rerouted traffic that is acceptable will be defined on a project-by-project basis by the Citizen Traffic Committee for that project and city staff. Generally, adjacent local streets should not receive an increase of more than 250 vehicles per day or an increase in

traffic greater than 50%, whichever is less. If adjacent streets receive higher than acceptable levels of rerouted traffic, additional studies will be undertaken by staff in order to consider possible mitigation of those impacts.

5. To ensure that essential City services are not compromised, the following guidelines will be followed. Reasonable emergency vehicle access will be preserved, and the appropriate agencies will be asked to review proposed traffic calming plans and to comment in writing.
 - a. The Citizen Traffic Committee may invite a Fire Department staff member to explain the Department's criteria for access to the neighborhood. All TCP projects must meet the approval of the Fire Department.
 - b. Traffic calming devices shall not block access to a fire hydrant as determined by the Fire Department.
 - c. On emergency response routes, as designated on the City of Santa Fe Emergency Response Route Map (Appendix C), speed humps or bumps shall not be used as a matter of public safety. The city and the Citizen Traffic Committee shall work to find other devices or techniques that can achieve the desired level of traffic management.
 - d. If a roadway segment is narrowed by a traffic calming device, it must leave travel width adequate for Fire and Solid Waste vehicle access.
 - e. A divertor at an intersection must allow for a forty foot turning radius.
 - f. If a road is closed and the resulting dead-end segment is more than 150 feet long, the closure must include a Fire Department approved turn-around.
 - g. If a project includes a street that is part of an operating regular service transit route, the use of traffic calming devices will be reviewed with the city's Transit Division and the Santa Fe Public School District Transit Department prior to approval.
 - h. All streets selected for traffic calming need to be evaluated to determine drainage impacts. Consideration shall also be given to streets designated on the City of Santa Fe Priority Snow Removal Roads Map (Appendix D). These concerns will be reviewed with the Streets and Drainage Division prior to approval.
 - i. If a street is a major conduit of storm water and its slope is steep enough that a traffic calming device would deflect storm water out of the public right of way, device(s) will be selected to minimize or eliminate this problem.
6. The variety of traffic calming devices that shall be employed shall meet objectives in accordance with sound engineering practices. The City of Santa Fe Traffic Division directs the installation of all traffic control devices in compliance with applicable laws and the Manual on Uniform Traffic Control Devices.

7. Speed humps shall not be used on any street with more than one travel lane in each direction.
8. Reasonable automobile access will be maintained. Pedestrian, bicycle, and transit access will be enhanced where possible and practical.
9. Parking removal shall be considered on a project by project basis. It shall be balanced with other needs.
10. The program shall be implemented according to city codes and related policies within applicable resources. The procedures outlined in this document shall be used.
11. A survey of the residents and property-owners in the project area may be conducted by city staff after the evaluation period to determine if some aspect of the installation no longer meets the needs of a neighborhood. If 75% of the people surveyed agree that a device or devices no longer meet the needs of the neighborhood, staff will review the performance of these devices and will estimate the cost of mitigating, revising or removing these devices.
12. If a project meets criteria to be considered for traffic calming and is ranked on the priority list, but is unfunded, a neighborhood association may elect to provide funds for the design and construction of such devices upon approval of the Traffic Division in accordance with city policies and these procedures.
13. Special events are not eligible for the funding and installation of traffic calming devices via this program.
14. After a project is implemented, if tests indicate hazards which had not been foreseen, the installation may be revised or removed at any time at the discretion of the Traffic Division. The City will not forward a survey in this situation, although notice will be provided to residents in the project area.

III. APPLICATION PROCESS

Anyone residing or owning property within a neighborhood is eligible to apply for a TCP project for a local, collector, or minor arterial street within that area. This section describes the steps involved in the application process.

- **Attend a pre-application meeting with a staff member from the City Traffic Division.**

The prospective applicant should call the Traffic Division to set up an appointment. Staff and the applicant will review the street or area in question and discuss the TCP process, including the initial petition process and application forms that the applicant must complete. Staff and the applicant will discuss the type, location and degree of the applicant's traffic concerns and discuss possible solutions. If a preliminary review indicates a potential hazard to the public exists or the issue is not related to speeding or cut-through traffic, staff may address the issue separately as it may not fall under the umbrella of the TCP. However, if the situation could fall under the TCP, the staff member will determine whether the potential project would be a *Local Street Project* or *Complex Traffic Calming Project*, and will identify a formal "project" or "affected" area for the project, which shall serve as the petition area. Staff will then provide the applicant with a packet of TCP program information, including application and petition forms.

- **Circulate the petition in the project area. Submit completed application.**

It is the responsibility of the applicant to circulate a petition to demonstrate that at least 30% of residents and property-owners in the identified petition area are in favor of initiating a traffic calming study. The petition signatures must be obtained within a three month period. Having this level of support is necessary for further study of neighborhood traffic calming in the area. The applicant is also responsible for notifying the contact persons of the registered residential association¹ in their area that they are preparing an application for a TCP project. The applicant must obtain the necessary petition signatures and complete the application materials and return them to the Traffic Division. If the material is incomplete or an insufficient number of signatures are submitted the materials will be returned to the applicant for revision. The date a complete package is submitted will be considered as the date of application for the program and the time when the project is carried to the next step.

¹ Registered residential association contact information is available from the City of Santa Fe Planning Division.

- **City Traffic Division staff evaluates the application for the eligibility and ranking of the potential project in the TCP.**

City staff will evaluate the potential eligibility and ranking of the project according to the procedures outlined in this document. Preliminary traffic studies are done to determine if the street or project area meet the minimum eligibility requirements for inclusion in the TCP. If a project is eligible, further studies are done to determine the priority ranking of the project in relation to other eligible projects that have been submitted to the TCP.

IV. PROCEDURES

The procedures for the City of Santa Fe Traffic Calming Program (TCP) include four components: Eligibility and Ranking, Plan Development, Plan Approval and Implementation, and Project Evaluation. These components are outlined below.

Eligibility And Ranking

Upon receiving a complete application package including the required petition of support, staff evaluates the eligibility of the proposed project. The eligibility is determined according to the following point system.

Eligibility Criteria – Local Street Projects

The first type of TCP project is the Local Street Project. This type of project focuses on the treatment of a neighborhood street that is experiencing traffic problems. The street must be designated as a **local street** on the Functional Road Classification (FRC) Map of the City of Santa Fe. Generally a Local Street Project should consist of treatment of a single local street. If the basic criteria discussed above are met then the proposed street is studied and scored based on the criteria described in Table 1.

Table 1 – Eligibility Criteria for Local Street Projects

Eligibility Criteria	Points	Basis for Point Assignment
Volumes	0 to 30	<i>Measure of Vehicles Per Day (vpd):</i> 0-500 vpd = 0 pts.; 501-750 vpd = 10 pts.; 751-1000 vpd = 20 pts.; over 1001 vpd = 30 pts.
Cut-through traffic	0 to 25	<i>Measure of Percent by which cut-through traffic exceeds local traffic (%):</i> 0-25% = 0; 26-50% = 5 pts.; 51%-100% = 15 pts.; above 100% = 25 pts.
Speeds	0 to 45	<i>Measure of Miles Per Hour by which the 85th percentile speed exceeds the posted speed limit (mph):</i> 0-5 mph = 0 pts.; 6-10 mph = 15 pts.; 11-15 mph = 30 pts.; over 15 mph = 45 pts.
Total Eligibility Points Possible	100	

The street must receive a minimum score of **40 points** in order to be eligible for a Local Street Project.

Eligibility Criteria – Complex Traffic Calming Projects

The second type of TCP project is the Complex Traffic Calming Project. These projects consist of traffic management on collector and minor arterial streets or, in some cases, on local streets that because of other factors are placed into the complex street category. For example, the study and treatment of several local streets that form a neighborhood street system would be categorized as a complex project. Complex Traffic Calming Projects may consider streets that are emergency response routes or priority snow removal roads (as designated on the city's Emergency Response Route and Snow Removal Roads Maps contained in the appendices of this document), or which result in a significant

diversion of traffic, and will look at a variety of possible treatments for the street. Because treatment of collectors and minor arterials may cause diversion of traffic onto surrounding streets, the project will entail a more detailed study of the street network throughout the neighborhood. The complex project may look at other issues along the street such as access points, enhancement of pedestrian facilities, median treatments, and others.

Following are the basic criteria for a Complex Traffic Calming Project:

- The street must be designated as a **collector or minor arterial street** on the Functional Road Classification Map of the City of Santa Fe, or, if classified as a local street, it must meet the special conditions described above, such as designation as an emergency response route or priority snow removal road.
- A minor arterial street must have a minimum volume of 2,000 vehicles per day. A collector street must have a minimum volume of 1,000 vehicles per day.
- Local streets moved into the Complex Traffic Calming Project track will be treated as collector streets in the scoring and ranking process.

If these basic criteria are met, then the proposed street is studied and scored according to the criteria in Table 2.

Table 2 – Eligibility Criteria for Complex Traffic Calming Projects

Eligibility Criteria	Points	Basis for Point Assignment
<i>For Minor Arterials only: Volumes</i>	0 to 40	<i>Measure of Vehicles Per Day (vpd):</i> 0-2,000 vpd = 0 pts.; 2,001-4,000 vpd = 10 pts.; 4,001-6,000 vpd = 20 pts.; 6,001-10,000 = 30 pts.; over 10,000 vpd = 40 pts.
	OR	
<i>For Collectors only: Volumes</i>	0 to 40	<i>Measure of Vehicles Per Day (vpd):</i> 0-1,000 vpd = 0 pts.; 1,001-2,000 vpd = 10 pts.; 2,001-3,000 vpd = 20 pts.; 3,001-5,000 = 30 pts.; over 5,000 vpd = 40 pts.
	AND	
Speeds	0 to 40	<i>Measure of Miles Per Hour by which the 85th percentile speed exceeds the posted speed limit (mph):</i> 0-5 mph = 0 pts.; 6-10 mph = 20 pts.; 11-15 mph = 30 pts.; over 15 mph = 40 pts.
Adjacent Residential Zoning	0 to 20	<i>Percentage of land adjacent to the street which is residentially zoned (%):</i> 0-50% = 0 pts.; 51%-75% = 10 pts.; above 75% = 20 pts.
Total Eligibility Points Possible	100	

A street must receive a minimum score of **60 points** in order to be eligible for a Complex Traffic Calming Project.

Ranking Criteria for All TCP Projects

Once a street is determined to be eligible for the TCP, it is ranked along with other eligible projects *of its same type* to determine the priority ranking of projects for the funding that is available. In addition to the points awarded to each project in the determination of eligibility, all projects can be awarded additional points in any of the categories listed in Table 3.²

Table 3 – Ranking Criteria for All TCP Projects

Ranking Criteria	Points	Basis for Point Assignment
Sidewalks	0 to 15	<i>Points assigned for lack of existing continuous sidewalk along street: Existing on both sides = 0 pts.; Existing on one side = 5 pts.; Existing on no sides = 10 pts.; no sidewalks and no shoulder = 15 pts.</i>
Pedestrian Facilities	0 to 15	<i>5 points are assigned for each existing pedestrian facility along street, including designated bike routes, designated elementary school crossings and/or areas with observed pedestrian usage (Maximum 15 points).</i>
Density of Adjacent Residential Zoning	0 to 10	<i>Points assigned for density of adjacent residential zoning as follows: Majority of units less than R5 = 0 points; Majority of units at R5 = 5 points; Majority of units greater than R5 = 10 points. Tie of 2 categories results in 5 points.</i>
Total Ranking Points Possible	40	

A project is able to receive a maximum of 100 points in the eligibility phase and a maximum of 40 points in the ranking phase for a possible total of 140 points. Based upon the points assigned to each project through these two phases, the projects are ranked.

If more than one project of the same type receives the same number of eligibility and ranking points, those projects shall be prioritized according to the date that they were deemed eligible for the TCP.

If an eligible project is not sufficiently prioritized to receive funding in the year in which it is determined eligible, then ten additional points are added to its overall score in each subsequent year until it is prioritized for funding. A project can remain on the eligibility list for a maximum of four years awaiting prioritization for funding. After that it would be dropped from the TCP.

² Analysis of accident rates could be useful in determining the ranking of Complex Traffic Calming Projects, although the accident rate information currently available is not adequate for such analysis. Accident information will be reviewed in the Plan Development phase of all NTMP projects.

Plan Development

Local Street Projects that are prioritized move directly into the plan development process. Complex Traffic Calming Projects, however, often require identification of additional resources for their planning and implementation. When resources are identified for a priority Complex Traffic Calming Project, that project moves into the plan development process.

A Neighborhood Traffic Calming Plan for both types of projects consists of the following components:

- ⇒ The assessment of the traffic-related problems and needs in the project area.
- ⇒ The identification of the goals and objectives of the community in solving those problems.
- ⇒ The development of alternative plans and solutions to be considered.
- ⇒ The selection of the preferred plan solution.

If a project includes significant diversion of traffic because of the construction of physical barriers, the project area will be expanded to include a larger “affected area” for the project. What is considered a significant volume of traffic will be decided by the Citizen Traffic Committee with Traffic Division staff assistance. The affected area is also defined by the Citizen Traffic Committee and Traffic Division staff.

Plan Development – Local Street Projects

- An initial open house is held in the neighborhood to discuss traffic-related concerns in the project area and possible solutions. Notice is given to property-owners and residents in the project area; to residents and businesses throughout the larger neighborhood; and to any other groups or institutions in the immediate area, including schools, churches and neighborhood associations.
- At this time, a Citizen Traffic Committee is formed for the project that will work with Traffic Division staff throughout the planning and implementation of the project.
- Next, staff and the Citizen Traffic Committee develop plan alternatives based on the studies that have been completed, the information that has been gathered from the neighborhood, and on sound engineering practices. The plan alternatives undergo review by several city departments.
- When the plan alternatives have been reviewed by the city, and revised as appropriate by the Citizen Traffic Committee and staff, a second community meeting is held for the community to review the alternatives and to decide upon a preferred plan.

Plan Development – Complex Traffic Calming Projects

- Because of the complex nature of the project, Traffic Division staff completes a series of traffic studies and analyses in the project area that goes beyond the studies done in the eligibility and ranking phase.

- An open house is then held in the neighborhood to present the information gathered and to discuss traffic-related concerns in the project area and possible solutions. Notice is given to property-owners and residents in the project area; to residents and businesses throughout the larger neighborhood; and to any other groups or institutions in the immediate area, including schools, churches, and neighborhood associations.
- At this time, a Citizen Traffic Committee is formed for the project that will work with Traffic Division staff throughout the planning and implementation of the project.
- Staff and the Citizen Traffic Committee then develop plan alternatives based on the studies that have been completed, the information that has been gathered from the neighborhood, and on sound engineering practices. The plan alternatives undergo review by several city departments.
- When the plan alternatives have been reviewed by the city, and revised as appropriate by the Citizen Traffic Committee and staff, a second community meeting is held for review and comment on the proposed alternatives.
- Staff and the Citizen Traffic Committee further refine the plan alternatives. The revised plan alternatives may undergo additional review by various city departments depending on the nature of any changes to the plan alternatives.
- When the plan alternatives have been reviewed by the city, and revised as appropriate by the Citizen Traffic Committee and staff, a third public meeting is held for the community to review the alternatives and to decide upon a preferred plan.

The development of a plan for a Complex Traffic Calming Project may require hiring a consultant to assist with planning, design and implementation of the project. The complex project may require additional activities to involve the public throughout the larger area, additional traffic measurement and analyses, the development of iterative conceptual plans, the surveying of residents and businesses in the project area to measure support, and other activities related to the development of final plans and implementation.

Plan Approval & Implementation

Plan Approval for All TCP Projects

A survey process is used as part of all TCP projects to measure the support of the traffic calming plan by project area residents and property owners. A description of the preferred traffic calming plan alternative and a survey are mailed to all residents and property owners in the project area.

The project area is defined by staff at the initiation of each project. For Local Street Projects the project area usually contains those properties along the subject street. For Complex Traffic Calming Projects the project area may include properties along the subject street(s) and along adjacent streets impacted by the project.

Each resident household and each property owner is allowed one response to the survey. A response time for the surveys to be returned is determined by Traffic Division staff and the Citizen Traffic Committee. The response time shall fall between three to six weeks from the date the survey is mailed. Final plan approval is contingent upon the Traffic Division receiving back at least 60% of all of the surveys distributed showing support for the preferred plan alternative. This is required for the Traffic Division to move ahead to plan implementation.

Although they do not receive a survey, the residential associations and City Council members in the area are notified about the preferred traffic calming plan alternative.

Implementation – Local Street Projects

- If the survey process demonstrates adequate support for the preferred plan alternative, staff will proceed with implementation of the traffic calming plan.
- Plan approval by the city governing body is not required for implementation of Local Street Projects. However, all applicable policies and rules of the city must be followed in implementing the preferred plan.
- Implementation of a Local Street Project consists of installation of permanent devices on the subject street.
- Prior to installation, traffic studies will occur on streets in and around the project area to determine “before” conditions in the area, which will be compared to studies taken later in the evaluation phase.

Implementation – Complex Traffic Calming Projects

- If the survey process demonstrates adequate support for the preferred plan alternative for a Complex Traffic Calming Project, approval of the project by the city governing body may still be required to secure funding needed for implementation of the project. In addition, all applicable policies and rules of the city must be followed in implementing the solution.

- Approval is for either test installation (temporary devices) or final installation (permanent devices) in the project area depending on the process outlined in the traffic calming plan.
- Prior to installation, traffic studies will occur on streets in and around the project area to determine “before” conditions in the area, which will be compared to studies taken later in the evaluation phase.

Project Evaluation

For all projects, an evaluation of the traffic devices is to be performed six months to twelve months after installation. This evaluation will include appropriate studies, such as volume, speed, etc., on the subject street(s) to determine the effectiveness of the devices.

An important aspect of the evaluation of all TCP projects is related to the impact of unintended, rerouted traffic onto other neighborhood streets. It is important not to divert traffic from one local street to another. TCP Policy #3 states that "the amount of rerouted traffic that is acceptable will be defined on a project-by-project basis by the Citizen Traffic Committee for that project and city staff. Generally, adjacent local streets should not receive an increase of more than 250 vehicles per day or an increase in traffic greater than 50%, whichever is less."

For all TCP projects, studies will be undertaken in and around the project area in the Project Evaluation phase to measure any impacts on the surrounding area. If staff determines that "after" conditions on other streets in the area show a high level of traffic diversion as a result of the traffic calming project, the city will explore methods for addressing those diversion problems. TCP Policy #3 states that "If adjacent streets receive higher than acceptable levels of rerouted traffic, additional studies will be undertaken by staff in order to consider possible mitigation of those impacts."

Project Evaluation – Local Street Projects

- A survey of the residents and property-owners in the project area may be conducted by city staff after the evaluation period to determine if some aspect of the installation no longer meets the needs of a neighborhood. If 75% of the people surveyed agree that a device or devices no longer meet the needs of the neighborhood, staff will review the performance of these devices and will estimate the cost of mitigating, revising or removing these devices.

Project Evaluation – Complex Traffic Calming Projects

- Temporary traffic calming devices may be used to determine if permanent installation is warranted or if some adjustment to the temporary devices is needed.
- A public meeting may be held to discuss the effectiveness of the temporary devices with local citizens in order to determine public response to the devices. If this seems to indicate that the devices are meeting the goals of the neighborhood, as outlined in the traffic calming plan, some or all of the devices may be installed permanently.
- However, if this seems to indicate that the devices installed no longer meet the needs of the neighborhood, an additional survey process may occur. As above, this survey will be of residents and property-owners who were surveyed for initial approval of the traffic calming plan. If 75% of the people surveyed agree that a device or devices no longer meet the needs of the neighborhood, staff will review the performance of these devices and will estimate the cost of mitigating, revising or removing these devices.

V. TECHNIQUES

This section provides a “tool box” of traffic management and traffic calming techniques that are available for consideration and use.

Choose the Right Tools

Any job is made easier by using the right tools. In the management and calming of traffic, strategies and solutions are based on two fundamental ideas:

- Identification of the nature and extent of the traffic-related issues. This is important whether the situation is on a single street (comprising a Local Street Project) or relates to a larger neighborhood area (comprising a Complex Traffic Calming Project).
- Selection and implementation of cost-effective measures to solve the identified concerns utilizing input from the affected neighborhood. This should be done based on the use of sound engineering principles and the consideration of aesthetics.

Experience from other communities around the country has indicated that it is important to use a variety of traffic management techniques, and that the tools selected should be tailored to fit each situation.

Aesthetics

Aesthetics should be considered in the process of developing traffic management solutions. To be successful, traffic management and calming measures should achieve a balance between aesthetics and the objective of calming traffic as no program will succeed if it is not based on community support. It is the intent of this program to develop solutions where safety, speed control and aesthetics are mutually supportive.

Selection of Tools

Almost all traffic management techniques (tools) have some effect on both traffic volume and speed. However, it is evident that some tools used to calm traffic can have a greater or lesser effect than others in controlling either volume or speed. Also, some tools are more effective and desirable on local neighborhood streets and less desirable for complex traffic management applications on collectors, minor arterials, or emergency response routes.

Emphasis in this program will be given to the selection of tools which are self-enforcing – that is, those which are physical traffic management measures. These tools are designed to affect driver perception of the street or neighborhood and are designed to directly influence motorist behavior. Unlike traditional methods of traffic management, such as the use of stop signs or speed limit signs, physical traffic calming measures rely on physically modifying driver behavior in a neighborhood.

Diverting Traffic Intentionally to Other Streets

In selecting tools to be used on streets it is important to limit the potential detrimental effects of diverting excessive volumes of traffic from one local street to another, or from collector or minor arterial streets to local streets. The potential for the diversion of traffic is considered in the selection of tools for all neighborhood traffic calming projects.

Since neighborhood collectors, and in particular, minor arterials, are meant to serve as through streets, traffic calming projects for these situations are not primarily designed to decrease traffic volumes. Instead, emphasis is on reducing traffic speeds, enhancing pedestrian usage, and associated concerns.

Choosing Other Minor Arterial Streets

For Complex Traffic Calming Projects, while it is not expected that the primary result will be to divert traffic away from the project street, some decrease in traffic volumes may occur as a result of the project. For example, some drivers may prefer not to use the traffic calmed street after the devices are installed. One outcome may be that drivers may choose to use other arterial streets instead. This is an appropriate use of these arterials and represents an objective of the program since they are intended to serve through traffic.

Techniques for Local Street Projects

Speed Control Measures

Speed control measures are of three types: *vertical measures*, which use the forces of vertical acceleration to discourage speeding; *horizontal measures*, which use the forces of lateral acceleration to discourage speeding; and *narrowings*, which use a psycho-perceptive sense of enclosure to discourage speeding. Tables 4, 5, and 6 below summarize the measures and their effects.

Vertical Measures

Speed humps are rounded raised areas placed across the road (Figure 1). The standard speed hump used in the City of Santa Fe is 14 feet long and 3 inches high. Its design speed (speed at which the 85th percentile is estimated to be) is 18 to 23 mph. Usually these humps are constructed with a taper on each side to provide for drainage. In some locations it may be desirable to provide a space wide enough to accommodate bicycles but this may also encourage motorists to cross the hump with one wheel in the gutter and the other on the hump. Speed humps may be located on streets where gutters exist, but considerations must be given to pedestrians if sidewalks are not in place. If no curb and gutter is in place, then devices such as bollards may be placed on each side of the humps to discourage motorists from driving on the shoulders.

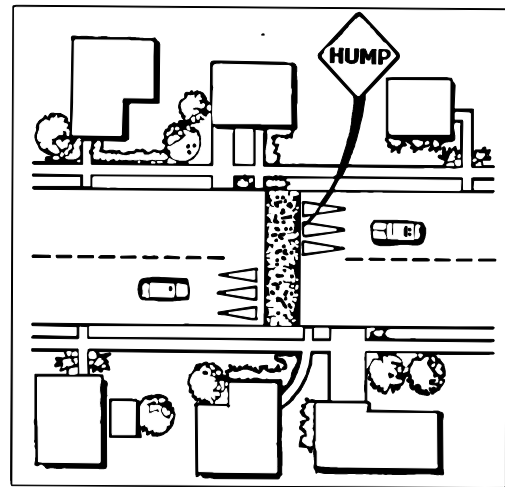


Figure 1 – Speed Hump

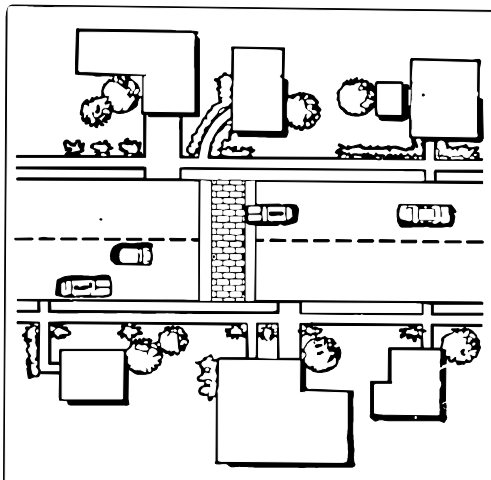


Figure 2 – Speed Table

Speed tables are flat-topped speed humps and can be constructed with brick or other textured materials on the flat section (Figure 2). These devices have the advantage of possibly being used to provide a pedestrian crossing and can be marked and placed at intersections or other pedestrian crossing locations. In this case they are called *raised crosswalks*. These devices are long enough for the entire wheelbase of a passenger car to rest on the top. The use of brick or other textured materials improves the appearance and tends to draw attention to them and may enhance safety and speed reductions. The standard speed table used in the city of Santa Fe is 22 feet long and 3 inches high. Its design speed is 25 to 30 mph.

In effect the device is less jarring than a speed hump and reduces higher operating speeds with out affecting the average driver. There is an alternate version of this device that may be used to calm traffic at an entire intersection called a *raised intersection* (Figure 3).

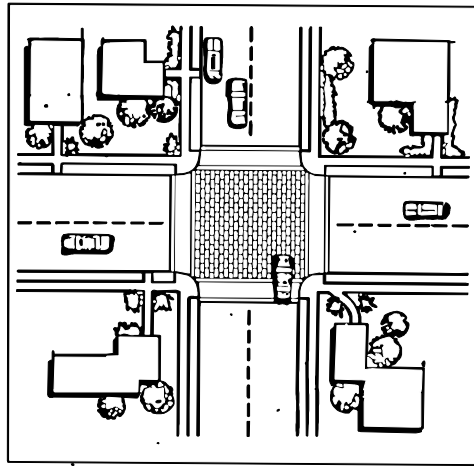


Figure 3 – Raised Intersection

Table 4 – Traffic Calming Tools for Local Street Projects
Speed Control Measures – Vertical

Traffic Calming Device	Speed Reduction	Volume Reduction	Noise And Pollution	Emergency Vehicle Access	Maintenance	Access Restrictions	Safety
Speed Humps	Yes	Traffic diversion possible	Increase	Some problems	Street cleaning difficult	None	Unclear
Speed Tables	Yes	Possible	Some Increase	Acceptable	Street cleaning difficult	None	Improved Ped Safety
Raised Intersection	Yes	Possible	Small Increase	Acceptable	Street cleaning difficult	None	Improved Ped Safety

Horizontal Measures

Horizontal measures achieve speed reduction by forcing drivers to drive around a device or to change direction, and by visually blocking long views of the road ahead.

Traffic circles are raised islands located at intersections around which traffic circulates (Figure 4). They are usually, though not always, circular in shape. A circle prevents drivers from speeding through an intersection by eliminating the straight through movement and forcing drivers to slow down to yield. Drivers must first turn to the right, then to the left as they pass the circle, and then back to the right again after clearing the circle. Large trucks can be accommodated by design modifications to the circle. Traffic circles are very effective in controlling vehicle speeds at an intersection – generally the design speed is 15 to 20 mph for passenger cars. At mid-block locations vehicles can speed up. The safety record is excellent as they generally reduce intersection-related accidents by up to 90 percent.

Chicanes are curb extensions that alternate from one side of the street to the other, forming S-shaped curves (Figures 5 and 6). They can prevent speeding by causing a change in direction of drivers and are speed control devices that are used in mid-block areas.

Lateral Shifts are curb extensions on otherwise straight streets that cause travel lanes to bend one way and then back to the other way to the original direction of travel (Figure 7). These devices can be used in conjunction with the creation of parking areas on streets. The design speed of this device is based on how much the street is bent and reductions in speeds can be quite significant.

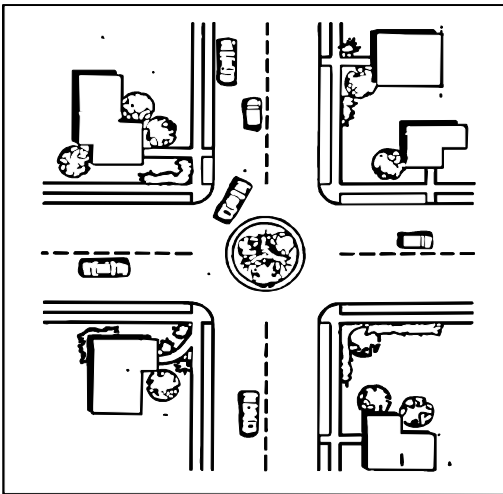


Figure 4 – Traffic Circle

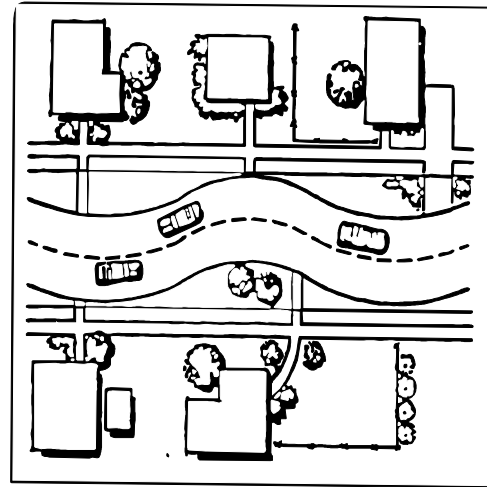


Figure 5 – Chicane

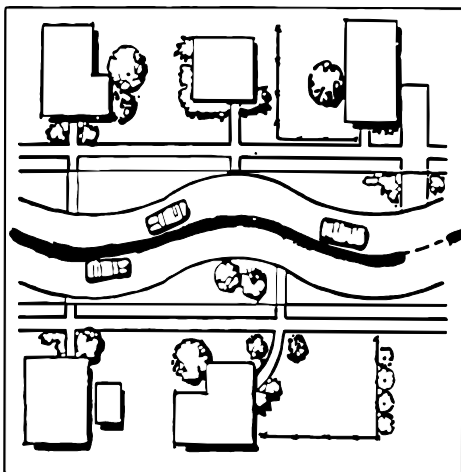


Figure 6 – Chicane with Center Island

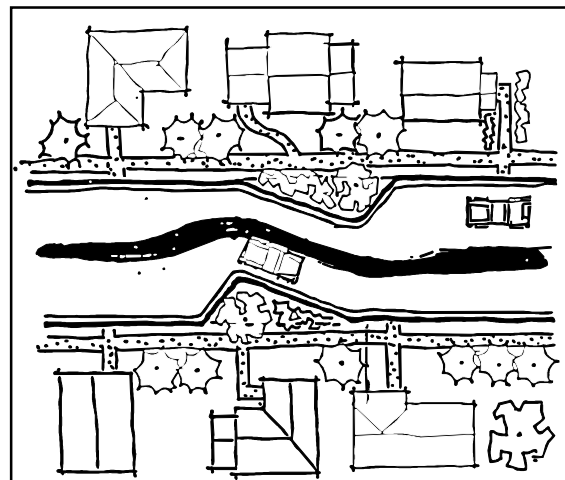


Figure 7 – Lateral Shift with Center Island

Table 5 – Traffic Calming for Local Street Projects
Speed Control Measures – Horizontal

Traffic Calming Device	Speed Reduction	Volume Reduction	Noise And Pollution	Emergency Vehicle Access	Maintenance	Access Restrictions	Safety
Traffic Circles	Yes, within intersection	Possible	Some increase	Some limitations	Vandalism	None	Improved
Chicanes	Possible	Possible	Possible pollution increase	Possible problems	None	None	Possible imprvemnt
Chicanes w/Center Island	Yes	Possible	Possible pollution increase	Possible problems	None	None	Possible imprvemnt
Lateral Shifts w/Center Islands	Yes	Possible	Small increase	Possible problems	None	None	Possible imprvemnt

Narrowings

Narrowing is usually accomplished by placing vertical elements in the roadway, and is intended to draw attention to a constriction in the road and to have a visual affect on drivers. For example, the roadway could be narrowed, and plantings or street furniture could be placed in the right-of-way. *Neckdowns* (bulbouts) are curb extensions at intersections that reduce the roadway width (Figure 8). If coupled with crosswalks they are called *safe crosses*. The main objective of this device is to “pedestrian-ize” intersections by shortening the crossing distance and to reduce the speed of turning vehicles.

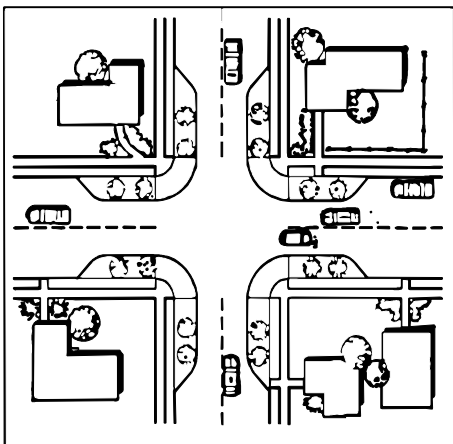


Figure 8 - Bulbouts

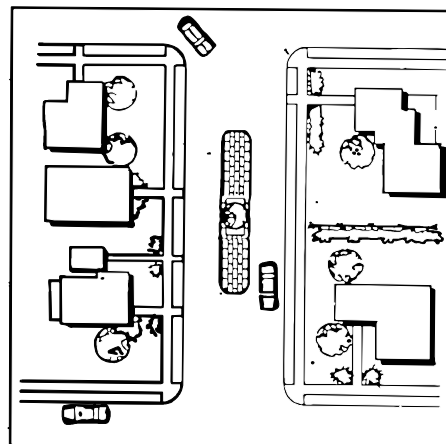


Figure 9 – Center Island Narrowings

Center island narrowings are raised islands located in the center of a street that narrow the travel lanes at that location (Figure 9). They can be attractively landscaped and are successful in providing a visual amenity and a neighborhood identity. If used at the entrance to a neighborhood and supplemented with textured pavement and monument signs they are called *gateways* (Figure 10). Centered islands have been effectively used on curves where speeding is a concern. They eliminate the possibility of drivers swinging

wide to speed through curves. Like other narrowings, these devices can help to pedestrianize streets as they provide a refuge area for pedestrians in the center of the street.

Chokers are curb extensions at mid-block that narrow a street by widening the sidewalk or planting strip (Figures 11 and 12). Chokers should generally be placed to provide a minimum of two traffic lanes, since if only one lane is provided opposing traffic will compete for space or right of way.

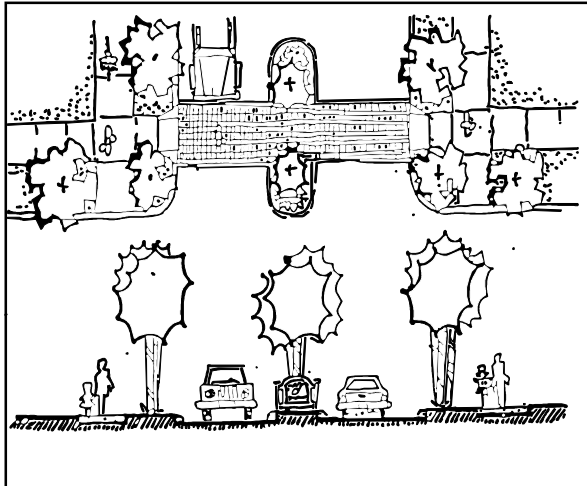


Figure 10 - Gateways

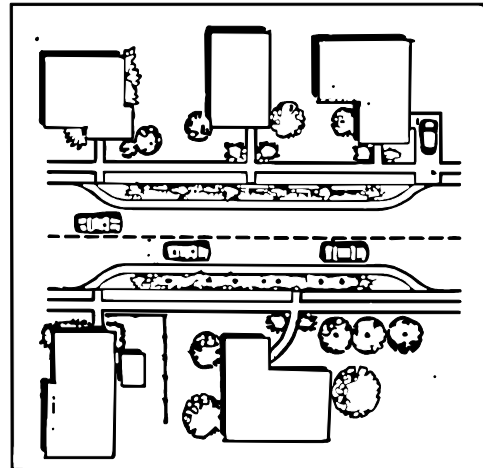
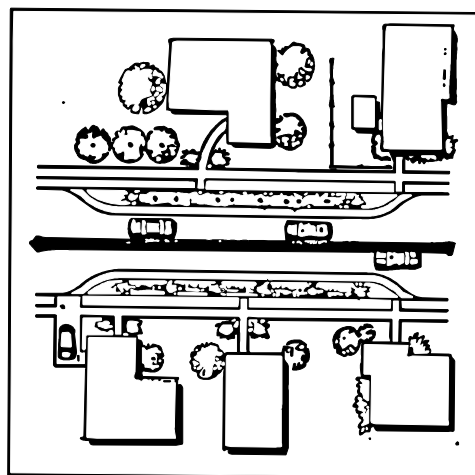


Figure 11 - Chokers



**Figure 12 – Chokers with
Center Island**

Table 6 – Traffic Calming Tools for Local Street Projects
Speed Control Measures – Narrowings

Traffic Calming Device	Speed Reduction	Volume Reduction	Noise And Pollution	Emergency Vehicle Access	Maintenance	Access Restrictions	Safety
Bulbouts	Yes, turning speeds reduced	No effect	No effect	Some limitation	None	None	Improved Ped Safety
Center Island Narrowings	Yes, possible on curves or turns	Not likely	No effect	Some limitation	None	None	Improved Ped Safety
Gateways	Possible	Mixed Results	No effect	Possible problems	None	None	Possible Improvement
Chokers	Possible, minor	Possible	No effect	No effect	Trucks hit curbs	None	Improved Ped Safety

Volume Control Measures

Table 7, entitled Traffic Calming Tools of Local Street Projects, Volume Control Measures, summarizes the measures and their effects.

Full street closures are barriers placed across a street to close the street completely to through traffic, usually leaving sidewalks or bicycle paths open (Figures 13 and 14). The barriers may consist of landscaped islands, walls, side-by-side bollards, or any other obstructions that leave an opening smaller than the width of a passenger car. These devices are a possible solution for cut-through traffic but are very controversial. The main concerns are the effect of the closures on emergency response, street network connectivity and that parallel streets may receive diverted traffic. This device is considered as a last resort if all other devices have failed.

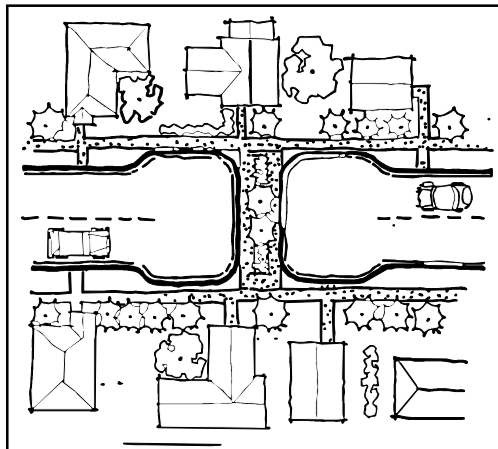


Figure 13 – Full Street Closure at Mid-Block

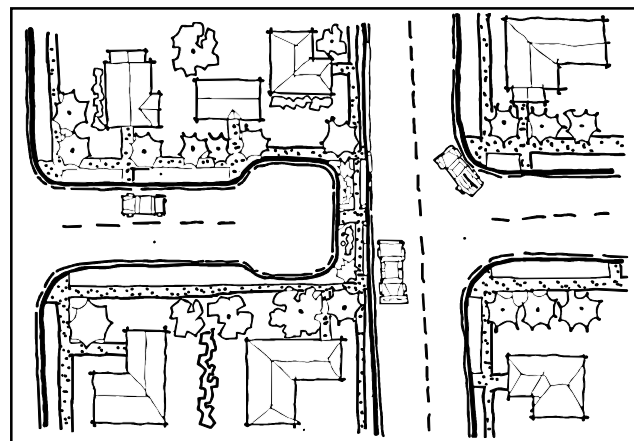


Figure 14 – Full Street Closure at Intersection

Half closures are barriers that block travel in one direction for a short distance on otherwise two-way streets (Figures 15 and 16). If used at an intersection (two are placed together) the result is a semi-diverter. These devices are typically used in gridded streets to make traffic more circuitous rather than direct.

Diagonal divertors are barriers placed diagonally across an intersection, blocking through movement (Figures 17 and 18). These are designed to create circuitous routes through neighborhoods. As with the full street closure, there are concerns with the effect of the closures on emergency response, street network connectivity and traffic diversion.

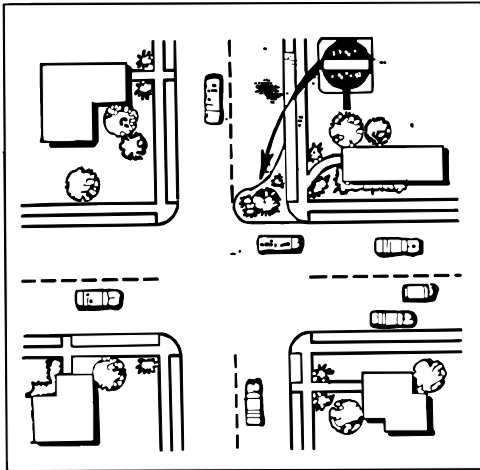


Figure 15 – Half Street Closure, One Side of Intersection

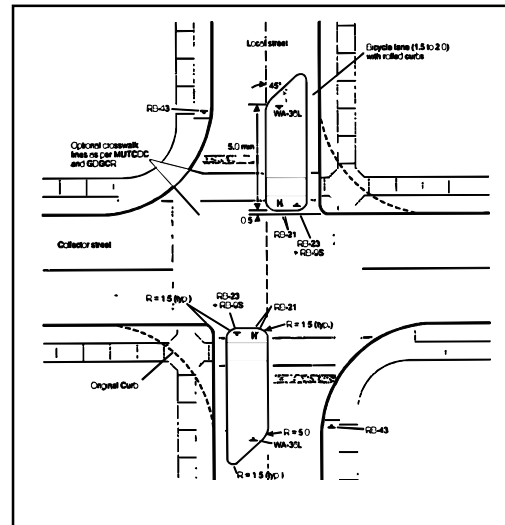


Figure 16 – Half Street Closure, Both Sides of Intersection with Bicycle Access (Canadian)

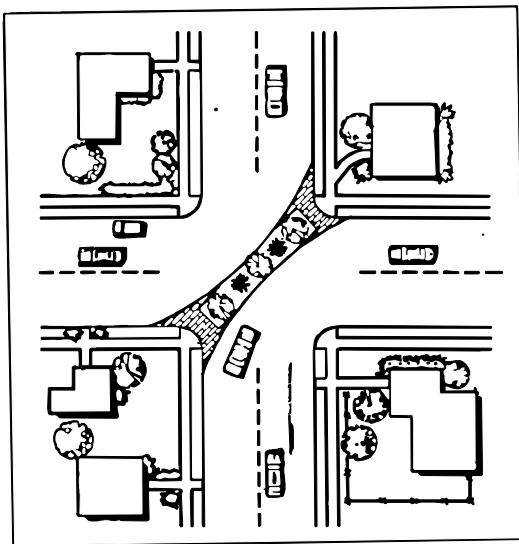


Figure 17 – Diagonal Diverter

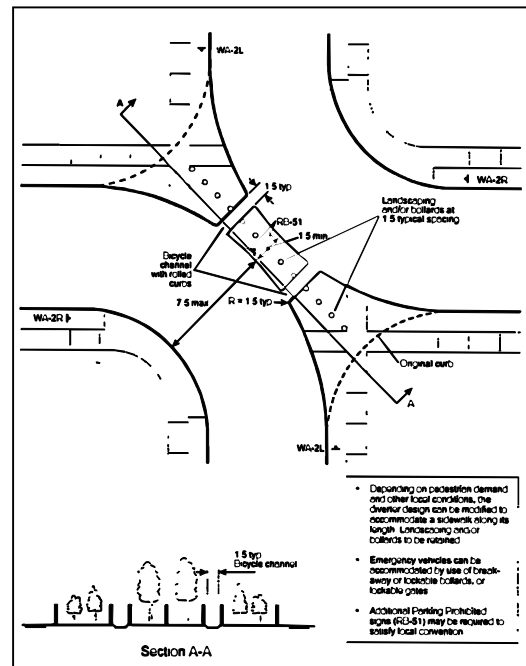


Figure 18 – Diagonal Diverter with Bicycle Access (Canadian)

Median barriers are raised islands located in the center of a street and continuing through an intersection so as to block through movements and left-hand turns at a cross street (Figures 19 and 20). *Forced turn islands* are raised islands that block certain movements on approaches to an intersection (Figure 21).

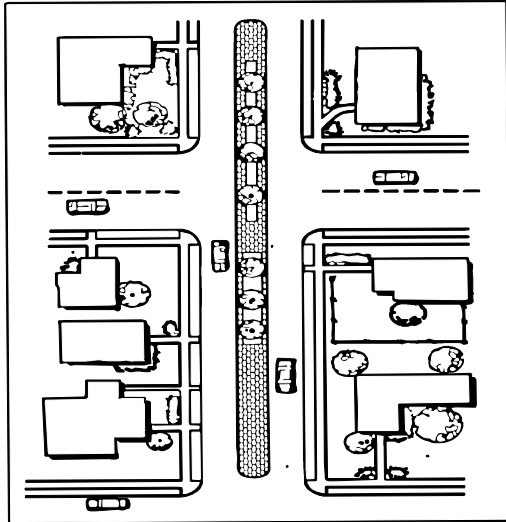


Figure 19 – Median Barrier

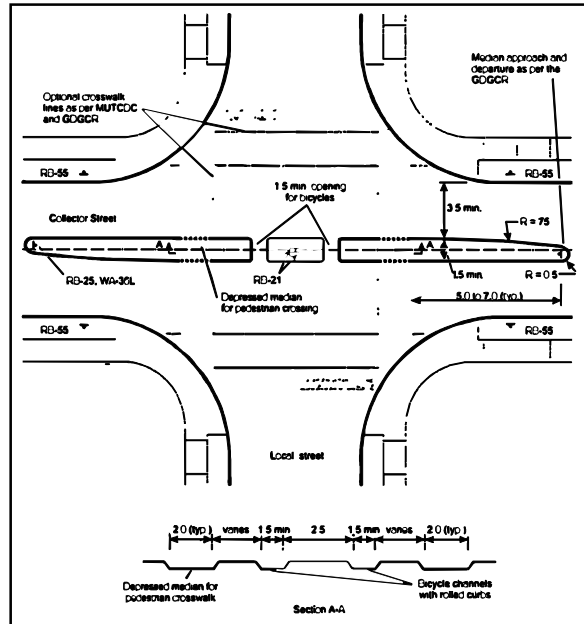


Figure 20 – Median Barrier with Bicycle and Pedestrian Access Improvements (Canadian)

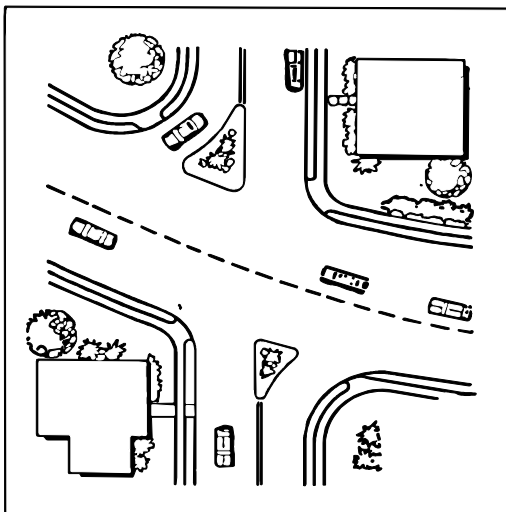


Figure 21 – Forced Turn Islands

These volume control devices should be used with caution and only after the situation has been thoroughly studied. In almost all cases, it is necessary to test these devices on a temporary basis in the field before final implementation. This is because of concerns with traffic being diverted from streets that are calmed to parallel streets that are not.

Table 7 – Traffic Calming Tools for Local Street Projects
Volume Control Measures

Traffic Calming Device	Speed Reduction	Volume Reduction	Noise And Pollution	Emergency Vehicle Access	Maintenance	Access Restrictions	Safety
Full Street Closures	Possible	Yes	Decrease	Possible problems	Possible problems, vandalism	All non-local traffic diverted to other streets	Possible, may shift accidents
Half Street Closures	Possible	Yes	Small increase	No effect	None	One direction, left/ right turn only	Improved ped safety, may shift accidents
Diagonal Diverters	Likely	Yes	Decrease	Possible problems	Vandalism	Through traffic eliminated	Possible improvement
Median Barriers	None	Yes	Decrease	Minor limitation	None	Right turn only	Improved
Forced Turn Islands	Possibly	Yes	Decrease	Possible limitation	Vandalism	Right turns only	Improved

Techniques for Complex Traffic Calming Projects

The traffic calming tools described for Local Street Projects were, for the most part, intended for local neighborhood streets that have primarily residential frontage and that are not designated as Emergency Response Routes. This section addresses all other streets that might be eligible for consideration as a Traffic Calming Project. This includes projects that might deal with complex traffic calming issues, such as treatment of a system of streets, emergency response routes, areas with complex access and pedestrian issues, or instances where significant diversion of traffic may occur.

Neighborhood collectors are intended to distribute traffic between more principal streets and local streets in the neighborhood. In other words, they are commonly called “through streets” – at least for a limited distance of generally at least ½ mile to no more than 1 mile in length. The streets may also serve multiple purposes, including carrying emergency response routes, buses, bicycles, and possibly trucks.

Minor arterials are meant to serve as through streets, and to interconnect with and augment the principal arterial system. Trips on these streets may be longer in nature than collectors, but are shorter than what should normally be carried on principal arterials.

Whether by design or as a result of growth, minor arterials and some collectors may carry a large number of vehicles through residential areas. When this occurs, the result can be a call by residents for traffic management or traffic calming to restore or improve their quality of life and mitigate the effects of unreasonable through traffic. These situations are more difficult to resolve and are typically controversial in nature.

Traffic calming of residential collectors and minor arterials has been relatively common in Europe for over a decade, but not very common in the United States. The tools discussed in this section are primarily drawn from European experiences and are based on the goal of enhancing the livability of neighborhoods with the primary objective of promoting pleasant conditions for users of neighborhoods, especially pedestrians. As indicated above, collectors and minor arterials do serve a function of carrying varying amounts of traffic. Based again on the European experience, the TCP program objective of reducing the average speeds of traffic on neighborhood streets will be of major importance.

As indicated above, devices selected cannot intentionally divert traffic away from project streets into inappropriate areas. For example, a complex street project should not divert traffic to an adjacent local neighborhood street, placing an unacceptable burden on that street. For Complex Traffic Calming Projects, while it is not expected that the primary result will be to intentionally divert traffic away from the project street, some decrease in traffic volumes will likely occur as a result of the project. For example, some drivers may prefer not to use the traffic calmed street after the devices are installed since higher speeds will not be possible.

Selection of Appropriate Measures

Selection of traffic calming measures for complex street projects will be based on the type of street and its functional class. As indicated above, the consideration of functional class in selecting measures attempts to strike a balance between mobility and other objectives such as compatibility with land use, and pedestrian/bicycle friendliness. For sub collector streets, mobility (the design speed of the street) may not be as crucial as other objectives. For minor arterials, with multiple lanes in each direction, the reverse is true. For streets which are designated emergency response routes and transit routes, providing for mobility is a concern that needs to be addressed.

General Considerations

The TCP program objective of reducing the average speeds of traffic on neighborhood streets will also be of major importance on collectors or minor arterials treated as a complex project. The primary measure used to determine the type of control and the spacing of devices will be the selection of an appropriate design speed. Table 8, entitled Santa Fe Speed/Priority of Classification of Roads for Traffic Calming, illustrates the design speed concept. For purposes of traffic calming, the design speed should be the same as the posted speed limit as this is what is appropriate based on the conditions of the street and environment.

Table 8 – Santa Fe Speed/Priority of Classification of Roads for Traffic Calming

Class	Type of Classification	Design Speed
Mixed Priority – Priority is shared between living and traffic functions	Collector	25 mph
	Minor Arterial	25 mph
Traffic Street – Major access and through routes, traffic function takes priority but vulnerable road users must be protected	Collector	30 mph
	Minor Arterial	30 mph

Selection of Measures and Spacing

Once the design speed and the class of road are selected, traffic calming measures (sometimes called slow points) and the spacing of devices can be selected. Table 9 shows guidelines for the spacing of slow points.

Table 9 – Spacing of Traffic Calming Devices (Slow Points) for Different Speeds

Desired Speed (mph)	Distance between Slow Points
30	450
25	300
20	225

Examples of traffic calming measures are shown below. The measures used are primarily related to four categories of tools which are: pre-warnings, lateral shifts (discussed in the section for Local Street Projects), speed tables which can also be at intersections in the form of raised intersections (discussed in the section for Local Street Projects), and a technique called "reallocation of right of way".

Pre-warning techniques include the use of gateways, traffic circles at intersections, and the use of appropriate street edge treatments. Table 10, entitled Traffic Calming Tools of Complex Street Projects, Pre-Warning Devices, summarizes the measures and under what circumstances they should be utilized.

**Table 10 – Traffic Calming Tools for Complex Street Projects
Pre-Warning Devices**

Traffic Calming Device	Street Classification	Design Speed	
		25 mph	30 mph
Gateways	Collector Minor Arterial	Yes	Yes
Traffic Circles	Collector Minor Arterial	Yes	No
Street Edge Treatments	Collector Minor Arterial	Yes	Yes
Roundabouts	Minor Arterial	No	Yes

Gateways are devices that are used to signal to drivers that there is change in the environment ahead (both neighborhood and road). This can take the form of many things, including structures mounted in center islands, plantings, or a treatment that is distinctive but is safely placed. Again, pre-warnings have proven to be successful in providing warning for traffic calmed areas and have been shown to affect driver behavior as they proceed into the neighborhood.

Roundabouts (Figure 22) and *traffic circles* can serve as gateways or be placed intermittently at intersections as speed control measures. With landscaped center islands, they can introduce a change from a business area to neighborhood and serve as both physical and psychological dividers.

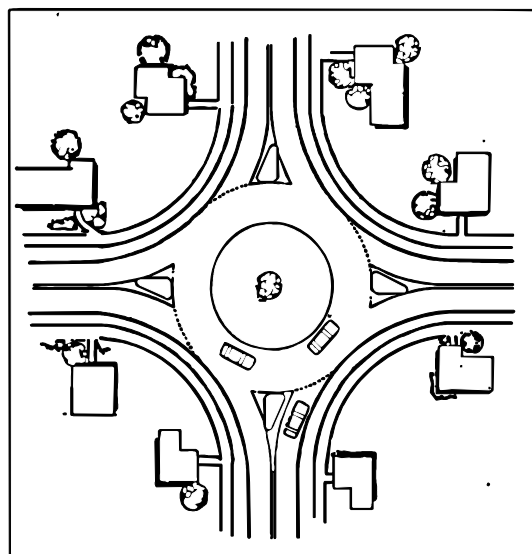


Figure 22 - Roundabout

Table 11, entitled Traffic Calming Tools of Complex Street Projects, Speed Tables and Lateral Shifts, summarizes these measures and when they should be utilized.

**Table 11 – Traffic Calming Devices for Complex Street Projects
Speed Tables and Lateral Shifts**

Traffic Calming Device	Street Classification	Design Speed	
		25 mph	30 mph
Speed Table	Collector Minor Arterial (X)	Yes	Yes (X)
Raised Intersection	Collector Minor Arterial (X)	Yes	Yes (X)
Chicane	Collector Minor Arterial	Yes	Yes
Chicane w/Center Island	Collector Minor Arterial	Yes	Yes
Lateral Shifts w/Center Island	Collector	Yes	No
Chokers	Collector Minor Arterial (X)	Yes (X)	No

(X) – To be used in special cases with approval of the Traffic Division

Reallocation of Right-of-Way

The technique of reallocation of right-of-way achieves speed control by redistributing space within the roadway right of way by giving motor vehicles lower priority and alternative modes a more equal or increased priority. Typically, this can include the reduction of pavement width to provide for easier pedestrian access at intersections or for a more pedestrian oriented street, the addition of bike lanes, the reduction of travel lane width, the addition of on-street parking (Figure 23), or the deflection of the roadway by a change in direction with possibly the addition of center islands. In the process of reallocation, one objective is to change the character of a road in ways that attempt to cause the motorist to drive more slowly and with greater alertness to potential conflicts.

Sometimes, the effects or changes are as much psychological as physical because the motorists perceive that the road is no longer exclusively motor vehicle oriented. Table 12, entitled Traffic Calming Tools of Complex Street Projects, Reallocation of Right of Way, summarizes these measures and under what circumstances they should be utilized.

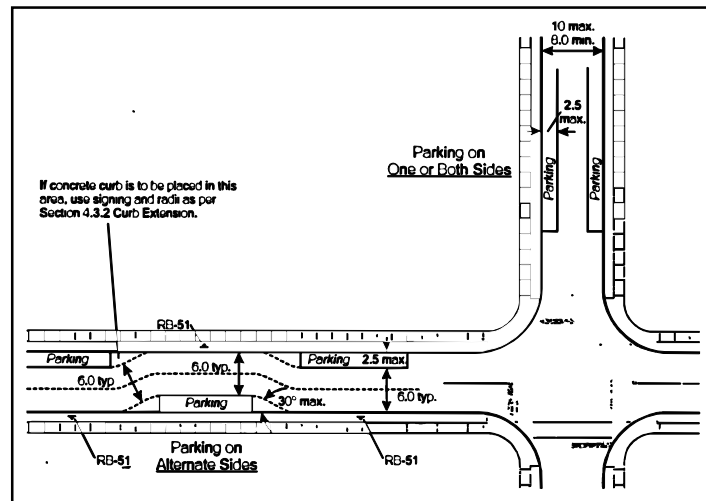


Figure 23 – Addition or Shift of On-Street Parking

Street edge treatments can be particularly important in higher classification streets such as minor arterials, where other treatments might not be appropriate. These treatments are intended to provide a safe and pleasant environment for pedestrians and can provide a calmer environment for drivers. This includes the use of trees, which change the character of a street, reduce noise, provide shade, and reduce the optical width of a street.

In some cases, the techniques described above can be combined in traffic calming plans (Figure 24). Physically and as well as psychologically, this combination can result in improved driver behavior.

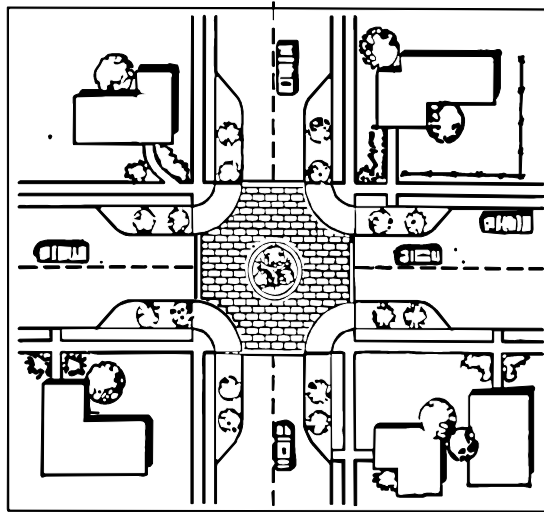


Figure 24 – Combined Measures: Bulbouts, Traffic Circle, Reduction of Lane Width, and Street Edge Treatments

Table 12 – Traffic Calming Devices for Complex Street Projects
Reallocation of Right of Way

Traffic Calming Device	Street Classification	Design Speed	
		25 mph	30 mph
Bulbouts	Collector Minor Arterial	Yes	Yes
Center Island Narrowings	Collector Minor Arterial	Yes	Yes
Bike Lanes	Collector Minor Arterial	Yes	Yes
Reduction Lane Width	Collector Minor Arterial	Yes	Yes
Addition of Parking	Collector Minor Arterial	Yes	Yes (X)
Street Edge Treatments	Collector Minor Arterial	Yes	Yes

(X) – To be used in special cases with approval of the Traffic Division

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